

Application/Control Number: 11/286,442

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CLMPTO/ (Re-Issue)

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Y.M.

Original claims 1 – 27

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28, 30, 36, 37
↓
1-20%
copolymer
To
polymer

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1. An adhesive system comprising, (a) a resin component comprising an etherified resin, (b) a polymer prepared from one or more ethylenically unsaturated monomers, (c) a curing agent, and (d) a polyvinyl alcohol, the amount of the resin component being 10-90 weight % based on the solids of the adhesive system.

2. An adhesive system according to claim 1, wherein the components a)-d) are present in the following indicated amounts in weight %, based on the solids of the adhesive system:

- a) from 40 to 85 weight %,
- b) from 10 to 50 weight %,
- c) from 5 to 20 weight %, and
- d) from 1 to 10 weight %.

3. An adhesive system according to claim 1, wherein the etherified amino resin has a degree of etherification of 10 to 75%.

4. An adhesive system according to claim 1, wherein the etherified amino resin is an etherified melamine-formaldehyde or an etherified melamine-urea-formaldehyde resin.

5. An adhesive system according to claim 1, wherein the polymer is a homopolymer or copolymer prepared from one or more monomers selected from the group consisting of vinyl esters, alkyl esters of acrylic and methacrylic acid, mono- and dialkyl esters of alpha, beta-unsaturated dicarboxylic acids, alpha beta-unsaturated carboxylic acids, styrene-butadiene and derivatives thereof, and mixtures thereof.

6. An adhesive system according to claim 5, wherein the polymer is a homopolymer or copolymer based on vinyl acetate.

7. An adhesive system according to claim 1, wherein the polymer comprises post-crosslinking groups.

8. An adhesive system according to claim 7, wherein the post-crosslinking groups are incorporated into the polymer by copolymerising one or more ethylenically unsaturated monomers with at least one monomer comprising at least one post-crosslinking group.

9. An adhesive system according to claim 8, wherein the polymer is a copolymer of vinyl acetate and N-methylol-acrylamid.

10. An adhesive system according claim 1, wherein the curing agent is a carboxylic acid.

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11. An adhesive system according to claim 10, wherein the carboxylic acid is formic acid or maleic acid.

12. An adhesive system according to claim 1 for use in gluing of wood-based products.

13. A hardener composition for gluing systems of the amino resin type comprising, (b) a polymer prepared from

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one or more ethylenically unsaturated monomers, said polymer containing post-crosslinking groups. (c) a carboxylic acid and (d) a polyvinyl alcohol.

14. A hardener composition according to claim 13, wherein the polymer is a homopolymer or copolymer prepared from one or more monomers selected from the group consisting of vinyl esters, alkyl esters of acrylic and methacrylic acid, mono- and dialkyl esters of alpha, beta-unsaturated dicarboxylic acids, alpha beta-unsaturated carboxylic acids, styrene-butadiene and derivatives thereof, and mixtures thereof.

15. A hardener composition according to claim 14, wherein the polymer is a homopolymer or copolymer based on vinyl acetate.

16. A hardener composition according to claim 13, wherein the post-crosslinking groups are incorporated into the polymer by copolymerising one or more ethylenically unsaturated monomers with at least one monomer comprising at least one post-crosslinking group.

17. A hardener composition according to claim 16, wherein the polymer is a copolymer of vinyl acetate and N-methylol-acrylamid.

18. A hardener composition according claim 13, wherein the carboxylic acid is formic acid or maleic acid.

19. A hardener composition according to claim 13, wherein the components b)-d) are present in the following indicated amounts in weight %, based on the solids of the hardener composition:

b) from 25 to 70 weight %

c) 10 to 50 weight %

d) from 4 to 30 weight %.

20. A hardener composition according to claims 13 for use in the formulating of an amino resin based adhesive system.

21. A method of application of an adhesive system according to claim 1, wherein each of the components a)-d) is applied separately onto the surface to be glued.

22. A method of application of an adhesive system according to claim 1, wherein component a) is applied separately and components b)-d) are mixed before application and applied as one component e) onto the surface to be glued.

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23. A method of application of an adhesive system according to claim 1, wherein all of the components a)-d) are mixed together at the moment of application and applied as one component onto the surface to be glued.

24. A method of application of a hardener composition according to claim 13, wherein each of the components b)-d) is applied separately onto the surface to be glued.

25. A method of application of a hardener composition according to claim 13, wherein all of the components b)-d) are mixed before application and applied as one component e) onto the surface to be glued.

26. An adhesive system according to claim 1, wherein the amount of etherified amino resin component is greater than or equal to 50 weight %.

27. An adhesive system according to claim 1, wherein the amount of etherified amino resin in the resin component is greater than or equal to 90 weight %.

Claim 28 (amended)

28. (Currently amended) An adhesive system according to claim 1, wherein the components b)-d) are present in the following indicated amounts based on the solids of the adhesive system:

-b) from 5-60 weight %,

-c) from 2-40 weight %,

-d) from [0.1-10] 0.1-20 weight %.

Claim 29 (original)

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29. An adhesive system according to claim 1, wherein the etherified amino resin has a degree of etherification of 4-95%.

Claim 30 (amended)

30. (Currently amended) An adhesive system, comprising a) an etherified amino resin, b) a vinyl acetate [copolymer] polymer including post-crosslinking groups incorporated by copolymerising one or more ethylenically unsaturated monomers with at least one monomer comprising at least one post-crosslinking group, c) a curing agent comprising carboxylic acid, and d) a polyvinyl alcohol, the amount of the amino resin component being 10-90 weight % based on the solids of the adhesive system.

Claims 31 – 35 (original)

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31. An adhesive system according to claim 30, wherein the components a)-d) are present in the following indicated amounts based on the solids of the adhesive system:

- a) from 40 to 85 weight %,
- b) from 10 to 50 weight %,
- c) from 5 to 20 weight %, and
- d) from 1 to 10 weight %.

32. An adhesive system according to claim 30, wherein the etherified amino resin has a degree of etherification of 10 to 75%.

33. An adhesive system according to claim 1, wherein the amount of etherified amino resin component is greater than or equal to 50 weight %.

34. An adhesive system according to claim 1, wherein the amount of etherified amino resin in the resin component is greater than or equal to 90 weight %.

35. A hardener composition according to claim 13, wherein the components b)-d) are present in the following indicated amounts based on the solids of the hardener composition:

- b) 3-85 weight %
- c) 2 to 50 weight %
- d) 0.1 to 40 weight %.

Claims 36-37 (amended)

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36. (Currently amended) A hardener composition for gluing systems of the amino resin type, comprising, on a 100% solids basis, from 25 to 70 weight % of vinyl acetate [copolymer] polymer containing post-crosslinking groups, from 10 to 50 weight % carboxylic acid, and from 4 to 30 weight % polyvinyl alcohol.

37. (Currently amended) A hardener composition according to claim 36, wherein the post-crosslinking groups are incorporated into the [copolymer] vinyl acetate polymer by

copolymerizing one or more ethylenically unsaturated monomers with at least one monomer comprising at least one post-crosslinking group.

Claims 38 – 44 (original)

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38. A hardner composition according to claim 36, wherein the copolymer comprises vinyl acetate and N-methylol-acrylamid.

39. A hardner composition according to claim 36, wherein the carboxylic acid comprises formic acid or maleic acid.

40. A method of gluing two or more substrates, comprising the steps of:

- (1) providing at least first and second substrates to be glued;
- (2) applying an adhesive system onto a surface to be glued on least one of said substrates, said adhesive system comprising (a) a resin component comprising an etherified amino resin, (b) a polymer prepared from one or more ethylenically unsaturated monomers, (c) a curing agent, and (d) a polyvinyl alcohol, the solids of the adhesive system;
- (3) gluing said at least two substrates with said adhesive system.

41. A method according to claim 40, wherein each of the components a)-d) are applied separately onto said at least one substrate.

42. A method according to claim 40, wherein component a) is applied separately and components b)-d) are mixed before application and applied as one component e) onto said surface to be glued.

43. A method according to claim 40, wherein all of the components a)-d) are mixed together at the moment of application and applied as one component onto said surface to be glued.

44. A method of application of an adhesive system according to claim 40, wherein the components a)-d) are present in the following indicated amounts and weight %, based on the solids of the adhesive system:

- a) from 40 to 85 weight %,
- b) from 10 to 50 weight %,
- c) from 5 to 20 weight %, and
- d) from one to 10 weight %.

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